

**HARTCROWSER***How come there is no map?*

Earth and Environmental Technologies

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J-2296-07

August 9, 1999

Mr. Gregory A. Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

RECEIVED

AUG 12 1999

IDHW-DEQ
Coeur d'Alene Field Office

Re: Second Quarter 1999 Performance Report
Avery Landing Recovery System

Dear Mr. Rapp:

Hart Crowser is pleased to present the Second Quarter 1999 Performance Report for the Avery Landing free product recovery system. This letter report presents the ~~first~~ ^{second} quarter groundwater elevations, product thickness measurements, and recovered free product volume.

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Four extraction wells (EW-1 through EW-4), two piezometers (P1 and P2), and three monitoring wells (HC-1, HC-4, and MW-5) were monitored on ~~June 22, 1999~~ ^{second}. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Flexidip, a free product measuring device. The river elevations at the four extraction well vaults were calculated based on the average slope of the river bottom and the distance between vaults. These measurements and calculations are presented with those of previous monitoring rounds in Table 1.

The extraction well operation was observed as follows:

- ▶ EW-1 is no longer in use, as described in the 1998 Annual Report;
- ▶ EW-2, EW-3, and EW-4 were operating and maintaining groundwater depression.





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FREE PRODUCT RECOVERY

The total volume of free product in the recovery tank is approximately 700 gallons. The 1998 Annual Report contained an error in estimated free product recovery. The treatment system is currently recovering about 10 gallons per quarter.

→ shouldn't this be 60 gallons per quarter? Yes!

PROJECT SCHEDULE

Table 2 presents the project schedule for the remainder of 1999. Since the groundwater extraction system will be operating year-round during 1999, the second quarterly monitoring event corresponds to the second quarter of the calendar year. As indicated, we plan on performing the next monitoring event on August 12, 1999, and will submit the second quarter monitoring report by September 3, 1999. If you should decide that this date needs to be altered, please let us know as soon as possible.

Sept 16, 1999

Isn't this the 2nd qtr report?

Table 2 - Avery Landing Recovery System

Remaining Project Schedule for 1999

| Remaining Schedule | Date |
|--|--------------------|
| Conduct Third Quarter Monitoring | September 16, 1999 |
| Submit Third Quarter Performance Report | October 8, 1999 |
| Conduct Fourth Quarter Monitoring | December 2, 1999 |
| Submit Fourth Quarter Performance Report | December 31, 1999 |
| Submit Annual Report | February 5, 2000 |

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.



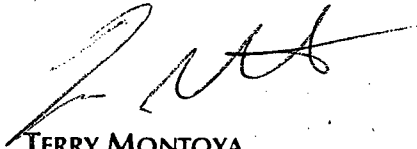
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If additional information or clarification is required, please call Terry Montoya at (206) 324-9530.

Sincerely,

HART CROWSER, INC.



TERRY MONTOYA
Project Engineer



MATT SCHULTZ, P.E.
Senior Associate Engineer

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Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

cc: Kreg Beck, Idaho Department of Environmental Quality



Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 1 of 5

| Monitoring Location | Date | Depth to Product | Depth to Water | Product Thickness | T.O.C. Elevation | Groundwater Elevation |
|---------------------|----------|------------------|----------------|-------------------|------------------|-----------------------|
| EW-1 | 10/27/94 | ND | 11 | 0 | 95.34 | 84.34 |
| | 6/30/95 | ND | 10.9 | 0 | 95.34 | 84.44 |
| | 9/21/95 | 11.25 | 11.27 | 0.02 | 95.34 | 84.07 |
| | 7/11/96 | ND | 9.74 | 0 | 95.34 | 85.60 |
| | 9/11/96 | ND | 10.88 | 0 | 95.34 | 84.46 |
| | 11/5/96 | ND | 11.94 | 0 | 95.34 | 83.40 |
| | 7/17/97 | ND | 10.38 | 0 | 95.34 | 84.96 |
| | 10/9/97 | ND | 13.17 | 0 | 95.34 | 82.17 |
| | 6/25/98 | ND | 10.01 | 0 | 95.34 | 85.33 |
| | 8/12/98 | NM | 10.52 | 0 | 95.34 | 84.82 |
| | 10/22/98 | Sheen | 10.86 | 0 | 95.34 | 84.48 |
| | 3/18/99 | | | 0 | 95.34 | 85.57 |
| | 6/22/99 | ND | 11.68 | 0 | 95.34 | 83.66 |
| EW-2 | 10/27/94 | ND | 10.37 | 0 | 95.24 | 84.87 |
| | 6/30/95 | 10.57 | 10.89 | 0.32 | 95.24 | 84.35 |
| | 9/21/95 | 13.9 | 13.92 | 0.02 | 95.24 | 81.32 |
| | 7/11/96 | 11.03 | 11.66 | 0.63 | 95.24 | 83.58 |
| | 9/11/96 | Sheen | 14.00 | 0 | 95.24 | 81.24 |
| | 11/5/96 | Sheen | 12.27 | 0 | 95.24 | 82.97 |
| | 7/17/97 | 8.99 | 9.09 | 0.1 | 95.24 | 86.15 |
| | 10/9/97 | Sheen | 15.44 | 0 | 95.24 | 79.80 |
| | 6/25/98 | 9.19 | 9.64 | 0.45 | 95.24 | 85.60 |
| | 8/12/98 | NM | 9.99 | 0 | 95.24 | 85.25 |
| | 10/22/98 | Sheen | 10.94 | 0 | 95.24 | 84.30 |
| | 3/18/99 | 10.17 | 10.27 | 0.1 | 95.24 | 84.97 |
| | 6/22/99 | 11.3 | 11.31 | 0.01 | 95.24 | 83.93 |
| EW-3 | 10/27/94 | ND | 10.05 | 0 | 95.78 | 85.73 |
| | 6/30/95 | 9.35 | 9.8 | 0.45 | 95.78 | 85.98 |
| | 9/21/95 | 10.92 | 11.08+ | 0.16 | 95.78 | 84.70 |
| | 7/11/96 | 8.53 | 8.64 | 0.11 | 95.78 | 87.14 |
| | 9/11/96 | 10.75 | 11.70 | 0.95 | 95.78 | 84.08 |
| | 11/5/96 | Sheen | 11.8 | 0 | 95.78 | 83.98 |
| | 7/17/97 | 9.13 | 9.33 | 0.2 | 95.78 | 86.45 |
| | 10/9/97 | 10.9 | 11.68 | 0.78 | 95.78 | 84.10 |
| | 6/25/98 | 8.78 | 9.43 | 0.65 | 95.78 | 86.35 |
| | 8/12/98 | NM | 11 | 0 | 95.78 | 84.78 |
| | 10/22/98 | 12.58 | 13.38 | 0.8 | 95.78 | 82.40 |
| | 3/18/99 | 9.03 | 9.23 | 0.8 | 95.78 | 86.55 |
| | 6/22/99 | 11.1 | 11.25 | 0.8 | 95.78 | 84.53 |

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 2 of 5

| Monitoring Location | Date | Depth to Product | Depth to Water | Product Thickness | T.O.C. Elevation | Groundwater Elevation |
|---------------------|----------|-------------------------------|----------------|-------------------|------------------|-----------------------|
| EW-4 | 10/27/94 | ND | 8.05 | 0 | 94.32 | 86.27 |
| | 6/30/95 | 7.84 | 7.85 | 0.01 | 94.32 | 86.47 |
| | 9/21/95 | 8.22 | 8.24 | 0.02 | 94.32 | 86.08 |
| | 7/11/96 | Sheen | 6.44 | 0 | 94.32 | 87.88 |
| | 11/5/96 | Sheen | 8.08 | 0 | 94.32 | 86.24 |
| | 7/17/97 | Sheen | 5.43 | 0 | 94.32 | 88.89 |
| | 10/9/97 | Sheen | 7.11 | 0 | 94.32 | 87.21 |
| | 6/25/98 | 5.28 | 5.3 | 0.02 | 94.32 | 89.02 |
| | 8/12/98 | NM | 8.98 | 0 | 94.32 | 85.34 |
| | 10/22/98 | ND | 8.98 | 0 | 94.32 | 85.34 |
| | 3/18/99 | 5.18 | 5.26 | 0 | 94.32 | 89.06 |
| | 6/22/99 | Sheen | 9 | 0 | 94.32 | 85.32 |
| HC-1 | 10/27/94 | ND | 13.25 | 0 | 97.50 | 84.25 |
| | 6/30/95 | ND | 12.00 | 0 | 97.50 | 85.50 |
| | 9/21/95 | NM | 13.42 | 0 | 97.50 | 84.08 |
| | 7/11/96 | ND | 11.92 | 0 | 97.50 | 85.58 |
| | 9/11/96 | ND | 12.90 | 0 | 97.50 | 84.60 |
| | 11/5/96 | Could not locate due to snow | | | | |
| | 7/17/97 | ND | 11.27 | 0 | 97.50 | 86.23 |
| | 10/9/97 | ND | 12.87 | 0 | 97.50 | 84.63 |
| | 6/25/98 | ND | 11.85 | 0 | 97.50 | 85.65 |
| | 8/12/98 | NM | 12.97 | 0 | 97.50 | 84.53 |
| | 10/22/98 | ND | 13.1 | 0 | 97.50 | 84.40 |
| | 3/18/99 | ND | 11.7 | 0 | 97.50 | 85.80 |
| | 6/22/99 | ND | 9.28 | 0 | 97.50 | 88.22 |
| HC-4 | 10/27/94 | 13.3 | 15.34 | 2.04 | 98.94 | 83.60 |
| | 6/30/95 | 11.89 | 15.49 | 3.6 | 98.94 | 83.45 |
| | 9/21/95 | 13.67 | NM | NM | 98.94 | 85.27 |
| | 7/11/96 | 11.58 | 12.93 | 1.35 | 98.94 | 86.01 |
| | 9/11/96 | 13.53 | 13.93 | 0.40 | 98.94 | 85.01 |
| | 11/5/96 | 11.82 | 13.62 | 1.80 | 98.94 | 85.32 |
| | 7/17/97 | 11.65 | 13.25 | 1.60 | 98.94 | 85.69 |
| | 10/9/97 | 12.67 | 14.92 | 2.25 | 98.94 | 84.02 |
| | 6/25/98 | 11.53 | 12.49 | 0.96 | 98.94 | 86.45 |
| | 8/12/98 | NM | 13.9 | NM | 98.94 | 85.04 |
| | 10/22/98 | 10.3 | 14.7 | 4.40 | 98.94 | 84.24 |
| | 3/18/99 | 10.5 | 14.05 | 4.40 | 98.94 | 84.89 |
| | 6/22/99 | 16.9 | 13.9 | 4.00 | 98.94 | 85.04 |
| HC-5 | 11/5/96 | ND | 11.22 | 0 | 97.95 | 86.73 |
| | 7/17/97 | Monument under standing water | | | | |
| | 10/9/97 | Monument under standing water | | | | |
| | 6/25/98 | Lost during road construction | | | | |

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 3 of 5

| Monitoring Location | Date | Depth to Product | Depth to Water | Product Thickness | T.O.C. Elevation | Groundwater Elevation |
|---------------------|----------|-------------------------------|----------------|-------------------|------------------|-----------------------|
| MW-4 | 9/14/94 | ND | 12.88 | 0 | 99.76 | 86.88 |
| | 6/30/95 | ND | 10.19 | 0 | 99.76 | 89.57 |
| | 9/21/95 | ND | 11.95 | 0 | 99.76 | 87.81 |
| | 7/11/96 | Sheen | 10.18 | 0 | 99.76 | 89.58 |
| | 9/11/96 | Sheen | 11.33 | 0 | 99.76 | 88.43 |
| | 11/5/96 | Lost during road construction | | | | |
| | | | | | | |
| MW-5 | 10/27/94 | ND | 10.45 | 0 | 97.76 | 87.31 |
| | 6/30/95 | ND | 9.13 | 0 | 97.76 | 88.63 |
| | 9/21/95 | ND | 10.83 | 0 | 97.76 | 86.93 |
| | 7/11/96 | ND | 8.98 | 0 | 97.76 | 88.78 |
| | 9/11/96 | ND | 10.71 | 0 | 97.76 | 87.05 |
| | 11/5/96 | ND | 10.65 | 0 | 97.76 | 87.11 |
| | 7/17/97 | ND | 8.75 | 0 | 97.76 | 89.01 |
| | 10/9/97 | ND | 10.89 | 0 | 97.76 | 86.87 |
| | 6/25/98 | ND | 8.56 | 0 | 97.76 | 89.20 |
| | 8/12/98 | NM | 10.68 | 0 | 97.76 | 87.08 |
| | 10/22/98 | ND | 13.5 | 0 | 97.76 | 84.26 |
| | 3/18/99 | ND | 8.8 | 0 | 97.76 | 88.96 |
| | 6/22/99 | ND | 6.44 | 0 | 97.76 | 91.32 |
| | | | | | | |
| MW-11 | 9/14/94 | 12 | NA | NA | 98.16 | NA |
| | 6/30/95 | 5.54 | 7.25 | 1.71 | 98.16 | 90.41 |
| | 7/11/96 | 6.34 | 10.00 | 3.66 | 98.16 | 88.16 |
| | 9/11/96 | 3.25 | 7.20 | 3.95 | 98.16 | 90.96 |
| | 11/5/96 | 3.05 | 7.20 | 4.15 | 98.16 | 90.96 |
| | 7/17/97 | 6.33 | 9.99 | 3.66 | 98.16 | 88.17 |
| | 8/12/98 | NM | 3.90 | NM | 98.16 | 94.26 |
| | 10/22/98 | 6.96 | 8.00 | 10.4 | 98.16 | 90.16 |
| P-1 | 10/27/94 | ND | 17.31 | 0 | 101.42 | 84.11 |
| | 6/30/95 | ND | 16.72 | 0 | 101.42 | 84.70 |
| | 9/21/95 | ND | 17.4 | 0 | 101.42 | 84.02 |
| | 7/11/96 | ND | 15.87 | 0 | 101.42 | 85.55 |
| | 9/11/96 | ND | 16.98 | 0 | 101.42 | 84.44 |
| | 11/5/96 | ND | 17.06 | 0 | 101.42 | 84.36 |
| | 7/17/97 | ND | 15.34 | 0 | 101.42 | 86.08 |
| | 10/9/97 | ND | 17.64 | 0 | 101.42 | 83.78 |
| | 6/25/98 | ND | 14.53 | 0 | 101.42 | 86.89 |
| | 8/12/98 | NM | 16.72 | 0 | 101.42 | 84.70 |
| | 10/22/98 | ND | 15.6 | 0 | 101.42 | 85.82 |
| | 3/18/99 | ND | 15.65 | 0 | 101.42 | 85.77 |
| | 6/22/99 | ND | 13 | 0 | 101.42 | 88.42 |

where's this
stuff going?

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 4 of 5

| Monitoring Location | Date | Depth to Product | Depth to Water | Product Thickness | T.O.C. Elevation | Groundwater Elevation |
|---------------------|----------|------------------|----------------|-------------------|------------------|-----------------------|
| P-2 | 10/27/94 | ND | 15.87 | 0 | 100.06 | 84.19 |
| | 6/30/95 | ND | 15.26 | 0 | 100.06 | 84.80 |
| | 9/21/95 | ND | 16.04 | 0 | 100.06 | 84.02 |
| | 7/11/96 | ND | 14.52 | 0 | 100.06 | 85.54 |
| | 9/11/96 | ND | 15.62 | 0 | 100.06 | 84.44 |
| | 11/5/96 | ND | 15.08 | 0 | 100.06 | 84.98 |
| | 7/17/97 | ND | 13.92 | 0 | 100.06 | 86.14 |
| | 10/9/97 | ND | 16.09 | 0 | 100.06 | 83.97 |
| | 6/25/98 | ND | 15.95 | 0 | 100.06 | 84.11 |
| | 8/12/98 | NM | 15.3 | 0 | 100.06 | 84.76 |
| | 10/22/98 | NM | 16.95 | 0 | 100.06 | 83.11 |
| | 3/18/99 | NM | | 0 | 100.06 | 86.02 **** |
| | 6/22/99 | ND | 11.65 | 0 | 100.06 | 88.41 |
| River at EW-1 | 10/27/94 | | | | | 83.12 * |
| | 6/30/95 | | | | | 84.03 ** |
| | 9/21/95 | | | | | 82.24 |
| | 7/11/96 | | | | | 83.74 *** |
| | 9/11/96 | | | | | 82.56 |
| | 11/5/96 | | | | | 83.16 |
| | 7/17/97 | | | | | 82.39 |
| | 10/9/97 | | | | | 83.00 |
| | 6/25/98 | | | | | 85.22 |
| | 8/12/98 | | | | | 85.42 |
| | 10/22/98 | | | | | 85.00 |
| | 3/18/99 | | | | | 83.93 |
| | 6/22/99 | | | | | 87.28 |
| River at EW-2 | 10/27/94 | | | | | 84.41 |
| | 6/30/95 | | | | | 85.32 |
| | 9/21/95 | | | | | 83.53 |
| | 7/11/96 | | | | | 85.03 |
| | 9/11/96 | | | | | 83.85 |
| | 11/5/96 | | | | | 83.59 |
| | 7/17/97 | | | | | 85.35 |
| | 10/9/97 | | | | | 84.20 |
| | 6/25/98 | | | | | 86.42 |
| | 8/12/98 | | | | | 86.62 |
| | 10/22/98 | | | | | 86.20 |
| | 3/18/99 | | | | | 85.13 |
| | 6/22/99 | | | | | 88.48 |

Table 1 - Avery Landing Groundwater and River Monitoring Data

| Monitoring Location | Date | Depth to Product | Depth to Water | Product Thickness | T.O.C. Elevation | Groundwater Elevation |
|---------------------|----------|------------------|----------------|-------------------|------------------|-----------------------|
| River at EW-3 | 10/27/94 | | | | | 85.16 * |
| | 6/30/95 | | | | | 86.07 |
| | 9/21/95 | | | | | 84.28 |
| | 7/11/96 | | | | | 85.78 *** |
| | 9/11/96 | | | | | 84.60 |
| | 11/5/96 | | | | | 84.10 |
| | 7/17/97 | | | | | 86.31 |
| | 10/9/97 | | | | | 85.16 |
| | 6/25/98 | | | | | 85.16 |
| | 8/12/98 | | | | | 85.65 |
| | 10/22/98 | | | | | 85.23 |
| | 3/18/99 | | | | | 86.10 |
| | 6/22/99 | | | | | 89.45 |
| River at EW-4 | 10/27/94 | | | | | 86.49 * |
| | 6/30/95 | | | | | 87.40 |
| | 9/21/95 | | | | | 85.61 |
| | 7/11/96 | | | | | 87.11 *** |
| | 9/11/96 | | | | | 85.93 |
| | 11/5/96 | | | | | 86.44 |
| | 7/17/97 | | | | | 87.27 |
| | 10/9/97 | | | | | 86.12 |
| | 6/25/98 | | | | | 88.34 |
| | 8/12/98 | | | | | 88.54 |
| | 10/22/98 | | | | | 88.12 |
| | 3/18/99 | | | | | 87.05 |
| | 6/22/99 | | | | | 90.40 |

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

T.O.C. - Top of Casing

ND - Not Detected

NA - Not Available

NM - Not Measured

229607\Plt699.xls